

# Milk Adulteration



**Dr Sultan Mahmood**  
First Dietcare Research Center (FDRC)  
[www.dietcare.pk](http://www.dietcare.pk)

# Introduction

Milk is the nature's most nearly perfect food supplying wide range of nutrients. Milk has a very high nutrient density in relation to calorie content of the food. When it leaves the udder of the animal, all the interplay's of adulteration begin. Other additives resembling in physico-chemical makeup can be mixed in natural milk due to ease.

Natural composition of milk is Lactose 1.3%, Protein 6%, Fat 4-6% and Water 88%.

# Media Reports

- CDGL reports 41% milk supplied is adulterated (*Dawn, Feb 2011*)
- Tetra pack milk is confirmed adulterated (*Dawn, Feb 2010*)
- 3,840 samples found adulterated (*UVAS 2009*)
- “Pakistanis are drinking white poison in the shape of packed and unpacked milk” (*Dawn Dec 2010*)
- Pakistan produces 17 billion liters/year of milk but public consumes 38 billion due to adulteration (*Cambridge University, 2009*)
- A gang used to fill branded milk packets with water and supply the same in the market (*India Today, Jun 2012*)

# Some ‘Field Operations’



# Possible Adulterants in Open Milk

## General Adulterants in **Open Milk**

- CHEMICALS** – Formalin, Hydrogen peroxide, Carbonates, Hypochlorite, Sorbitol, Boric acid
- DETERGENTS** – Surf, Dentonic powder, Washing soda, Hair removing powder
- FERTILIZERS** – Urea, Ammonium phosphate
- FOODS** – Salts, Cane sugar, Starch, Cooking oil, Inferior dry milk, Whey, Gelatin, Cellulose, Sucrose
- WATER** – Unhygienic water and Dirty ice
- OTHERS** – Mixing inter species milk (eg: goat or camel milk with buffalo milk, Dirt, Urine of producer)

# Possible Adulterants in Packed Milk

## Presence of Impurities & 'Purpose' in **Packed Milk**

- 20% fresh milk **AS NATURAL AGENT**
- 30% Impurities **AS FOOD VALUE BOOSTER**, like:
  - 3% Urea (fertilizer), or melamine (plastic) **AS PROTEIN & SNF BOOSTER**
  - 7% Substandard cooking oil **AS FAT BOOSTER**
  - 4% Powdered water chestnut or inferior dry milk **AS THICKENING AGENT**
  - 3% plant gum **AS THIKENNER**
  - 3.5% Formalin (used for preserving dead bodies) **AS LIFE ENHANCER**
  - 2.9% hair removing powder **AS LIFE ENHANCER**
  - 4.7% Penicillin **AS ENHANCER OF LIFE, THICKNESS & FRAGRANCE**
  - 2.7% Zoonotic pathogens **AS DIGESTIVE AID**
  - 0.2% Soda bicarbonate **AS TASTE ENHANCER**
- 50% Unhygienic water **AS VOLUME ENHANCER** to make 100%

# Home Testing

1. **Milk slip test** - Put a drop of milk on a polished vertical surface. If it stops or flows slowly, leaving a white trail behind, it is pure milk. Milk mixed with water or other agents will flow down immediately without a trace.
2. **Reduction test** - Boil some milk on a slow heat while moving it with a spoon till it becomes solid (khoya). Take it off the heat and wait for 2-3 hours. If the produced solid is oily, the milk is of good quality; if it's not, it means the milk is synthetic.

# Home Testing

3. **Rosalic test** Make a solution with water and rosalic acid. Add a drop of this solution to a spoon full of milk. If milk turns brick red, it means that soda has been added to milk
4. **Lactometer test.** It shows water adulteration. If the milk shows a rating below 26, that means water has been added to it
5. **Resorcinol test.** “A spoon-full of milk is added to a drop of this chemical and if the milk turns yellow, it means it is safe for consumption. If it turns red, that means it is adulterated with sugar

# What to Do?

- Time for a realistic **PROTEST**, abandon buying open or packed milk if you doubt it because we are drinking chemicals and artificial milk. Boycott **MILK PRODUCTS**.
- **CONSUMER MOVEMENT** in this direction have to be actively encouraged and use it as **PRESSURE**.
- Food adulteration takes place due to **DISHONESTY**, though it may also be due to **IGNORANCE**. We should educate ourselves and the masses
- **EDUCATION** of traders and consumers as well as legal measures have to be simultaneously undertaken to curb adulteration.

# Thanks for Paying Attention

## DISCUSSION !!

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